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EFFECTS OF NANOFERTILIZERS ON SQUASH

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The production of manganese zinc ferrite nanoparticles for the use as fertilizers for cucurbita pepo L .Manganese, zinc, and iron are the most essential micronutrients needed for plant growth and are implemented as foliar fertilizers. Here, a simple template-free microwave-assisted hydrothermal green synthesis technique was acclimated to produce manganese zinc ferrite nanoparticles (Mno.5Zno.5Fe204 NPS) at varying temperatures (100, 120, 140, 160, and 180 o c). The prepared nanomaterials were operated at various concentrations (O, 10, 20, and 30 ppm) as foliar nano fertilizers during the squash (Cucurbita pepo L) planting process. X-ray diffraction patterns of the prepared nanomaterials established the flourishing result of the nano ferrite material. The prepared nano fertilizers showed type IV adsorption isotherm property for mesoporous materials. . FE-SEM and HR-TEM imaging showed that the nanoparticles were cubic shaped and expanded in particle size with the increase in microwave temperature during production. The consequence of the application of the synthesized ferrite nanoparticles on vegetative growth, proximate analysis, minerals content, and the yield of the squash plant was investigated for two consecutive successful planting seasons. The nano ferrite synthesized at 160 o c and applied to the growing plants at a concentration of 10 ppm gave the highest increase in % yield (49.3 and 52.9%) compared to the untreated squash for the two consecutive seasons, whereas the maximum organic matter content (73.0 and 72.5%) and total energy (260 and 258.3 kcal/g) in squash leaves were obtained in plants treated with 30 ppm ferrite nanoparticles synthesized at 180 o c. On the other hand, the maximum organic matter content (76.6 and 76.3%) and total energy (253.6 and 250.3 kcal/g) in squash fruits were attained with plants supplied by 20 ppm ferrite nanoparticles synthesized at 160 o c. These results show that the simple template-free microwave-assisted hydrothermal green synthesis technique for the production of manganese zinc ferrite nanoparticles yields nanoparticles appropriate for use as fertilizer for Cucurbita pepo L.